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# Digitalization of Physical Content Products

## - an Investigation into Consumer Perceived Value

The significance of consumer perceived value for marketing decisions and the link between value creation and business long-term success is widely acknowledged in the literature. However, no study has yet assessed empirically if different perception of value exist for physical products compared to their digital counterparts. A perceived value model consisting of five constructs –price value, quality value, epistemic value, emotional value and social value, is applied. Further, a digital basic version is tested against an ownership-enhanced digital version and one where the perceived effort to gain and handle the digital version is reduced. A significant increase for digital products by improving the ownership notion or reducing the perceived effort was not to be found. Nevertheless, tendencies support the general idea and prepare the ground for further investigations. This thesis progresses the value literature through increasing our comprehension of how individual value dimensions differ for physical and digital products. Based on the primary data gathered by a customer survey, the findings support that different perceptions of value exist for physical products compared to their digital counterparts, particularly for epistemic, emotional and quality value. This calls for the use of differentiated value-based marketing strategies for a company to be successful in both, the real and the digital world.

Keywords: *consumer perceived value, different value perceptions, digital content products, physical content products, digitalization, perceived value of digital products.*

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# 1. Introduction

*"The digital revolution is far more significant than the invention of writing or even of printing."*

*- Douglas Engelbart*

## 1.1 The world: Digitalized

The notable quote above was given in 1997 by Douglas Engelbart, an American computer pioneer and inventor of the computer mouse and hyper text. One must not fully agree to this statement, but one must acknowledge that digital information technology has changed our everyday life and the way humanity exchanges knowledge. To date there are more than one billion computers installed world-wide (eTForecast, 2011) and over 60% of the population have Internet access in the industrial countries (Internetworldstats, 2011). But not only is the hardware penetration growing steadily, we also spend a greater part of our daily lives in the digital world, be it at work, for studying or on the go on our mobile phones.

As early as 1993, Rayport and Sviokla recognized the shift from spending time in the physical world towards the realm of the digital. Instead of going to the inner city during regular opening hours, people shop on Amazon.com, they do their financial transactions via online banking, meet their friends on Facebook and look for the love of their lives on Match.com. And every second mobile phone in the US is nowadays a Smartphone (Shein, 2011), connecting their owners constantly to the Internet. This rapid change in how we use technology has severe implications on all businesses (Booz & Company, 2010) and creates unexplored opportunities for companies and marketers alike.

A good example for such a shift towards digital products is presented by the gaming industry. Already in 2009, video gaming surpassed both the music and the movie industry in terms of revenue (Guardian, 2009) by drawing consumers away from concerts and cinemas into virtual worlds. Websites like *www.steampowered.com* make it possible to purchase and play computer games without ever having to acquire a physical copy of the game. And not only do top titles such as *World of Warcraft* create over $1billion in revenues per year (Guardian, 2009), they also give rise to a new market for virtual goods that amounts to $2.1 billion today and is growing rapidly. This market consists exclusively of virtual in-game-items which players trade for real money in order to gain advantages inside a computer game (Smith & Hudson, 2011).

The digital success of the gaming industry and other success stories like the over 18 billion mobile phone applications that consumers downloaded to their iPhones (Apple, 2011), illustrate an increasing willingness among consumers to acquire products that only exist in their digital form and the future potential that lies within these markets. However, not all industries manage this shift so smoothly.

Classical media companies undertake significant efforts to follow their consumers towards the digital sphere by digitalizing their content products, whose main purpose is the delivering of information, entertainment, education or training. Today, movies can be rented and watched online, big music labels offer their artists' songs as downloadable mp3 files and most newspapers and magazines have online portals that are updated continuously. And in 2010 for the first time in history more advertising money was spent online than on print advertising. Online advertising grew overall by 13.9%, which amounts to $25.8 billion (eMarketer, 2010). At a closer look however, 48% of this money was spent on search advertising and resents thus with the big traffic aggregators like Google and Facebook and not with the actual content

producers (eMarketer, 2010). At the same time consumers seem to be hesitant to invest their money in purely digital content products. Although consumers spend increasingly more time with digital media, their spending on digital has almost halved from 2009 to 2010 (Guardian, 2010). As a consequence, content producers struggle to be profitable even though digitalization is decreasing production costs and content consumption is as high as never before. In 2010 alone, the US newspaper industry will have lost over 1000 newsroom jobs, making American news rooms 30% smaller than in the year 2000 (SNM, 2011).

Evidently, the growth of digital content consumption and changing user behavior provides lucrative opportunities for companies in all fields to digitalize their products. Filling these opportunities and providing desired value to customers can be considered a key component to differentiate one's products from the competition and to guarantee long-term business success (Albrecht, 1992; Ravald & Grönroos, 1996; Slater, 1997). When looking into digitalization, an initial question arises – does consumer perceived value of a content product differ between physical and digital distribution? And if so, how is it possible to influence the value perception of digital content products?

## 1.2 Problem Definition

To date, the majority of content producing companies, such as publishers, music labels or newspapers, simply took their physical products (books, music-CDs, magazines, etc.) and digitalized them – applying the same sales models and marketing strategies as in the physical world. Instead of increasing their revenues due to lower production costs however, these companies encounter severe problems to monetize on the digital versions of their content. Newspapers and magazines lost their distribution monopoly on the latest information and are suddenly competing with free information portals and private blogs, making it almost

impossible to charge consumers for their news (Guardian, 2010). Whereas, the music and film industry has tried throughout the last decade various alternatives to prevent their digital products from piracy, be it through marketing, stricter laws or digital rights management. However, none of their measures seems to have been successful (Stini, Mauve & Fitzek, 2006).

While seemingly unwilling to pay for digital content, customers have been and still are willing to pay for physical content products (Booz & Company, 2010). This behavior seems remarkable as the category of content products – physical or digital – appears to be purchased mainly in order to obtain the content they provide.

One possible explanation for this could be that consumers attach only little value to digital products. Previous research has provided evidence that perceived value is closely interlinked to purchase intention and willingness-to-pay (e.g., Dodds, Monroe, & Grewald, 1991; Monroe, 1990; Szybillo & Jacoby, 1974; Zeithaml, 1988). There has furthermore been evidence that digital and physical content products have distinct characteristics (Baehr & Schaller, 2010) which could influence value perceptions. Additionally, it has been acknowledged that consumers have difficulties putting a monetary value on digital products (Rowley, 2008).

However, despite the growing size and importance of the market and the interest shown by practitioners, suitable and methodical academic research dedicated to understanding this scenario has been lagging. Most literatures focus either on the value of physical products and describing the different value dimensions (Zeithaml, 1988; Sheth, Newman & Gross, 1991; Woodall, 2003) or the analysis of specific value elements of digital products (Zeithaml, Parasuraman & Malhotra, 2002; Stini et al., 2006; Kim, Oh & Shin, 2010), but none on the connection between both of them.

This thesis shall thus examine how the consumer perceived value of a content product changes when it is taken from its physical form to a digital manifestation. Value is often-times described as a multi-dimensional construct, which will be outlined in more detail in chapter 2, therefore the more explicit question is which dimensions of perceived value are affected by the digital transformation. To the knowledge of the authors, no previous study like this has been undertaken to date.

For an even deeper understanding of the value and digital product relation, this thesis sets further out to test two concepts that can potentially increase the perceived value of a digital content product. Firstly, perceived ownership, a notion that might create a stronger connection with the product and hence increase value. And secondly, reduction of the perceived effort to gain and handle the product to remove potential barriers of experiencing or limiting the value the product carries. Those concepts are highlighted in literature and current publications to have effects on the perception of digital products (Garbarino & Edell, 1997; Stini, et al., 2006). However their influence on the perceived customer value has yet to be explored.

This leads to the following research questions:

1. How does a consumer's perception of value change when a physical product is taken digital? Are different value dimensions affected by the digitalization?

2. What role do certain concepts such as perceived ownership and perceived effort play for the value perception of a digital product?

## 1.3 Main Objectives

This thesis intends to provide knowledge about how the customer's value perception of a content-driven product changes when it is taken from its physical manifestation to a digital

product. Above all, the authors aim to illustrate which dimensions of value change through the digitalization and start a discussion about potential causes. The sub-purpose is to discover if two concepts highlighted in the literature – perceived effort and perceived ownership – can increase the perceived value of a digital product.

All in all, this thesis will progress the value literature through increasing our comprehension of how individual value dimensions differ with physical and digital products.

## 1.4 Purpose for the Marketing World

Currently, there is a lack of studies investigating the consumer perceived customer value of digital products from a holistic perspective. Nor has research been undertaken which might suggest that there is any influence on the perception of value when a product is taken from its physical manifestation to a digital format. As customer value is "the fundamental basis for all marketing activity" (Holbrook, 1994, p. 22) the authors believe closing this gap in literature is critical for successful marketing activities in the digital area. In this new environment, product development is often characterized by trial and error and applying marketing concepts from the physical world. The aim of this paper is to gain a better understanding on the customer value concept in a digital environment. This will eventually show opportunities for marketers and companies to unfold the potential of their digital content and create digital products that are valued more by consumers, which translates into a higher willingness to pay and thus increased sales.

The objective is also to provide evidence on how perceived ownership and perceived effort affect the value perception of consumers in the digital area and give confidence to companies and marketers that they are creating the most valuable product for their customers. From this

study marketers should better understand the impact of digitalizing a content product and how this will affect consumers' value perception.

## 1.5 Delimitations

This thesis was written with the specific focus on changes in consumer perceived value between physical and digital content products, and therefore certain practical and theoretical delimitations had to be made. In general, the practical scope was limited to two students researching the topic in a time frame of four month.

Furthermore, the study was set out to concentrate particularly on the Swedish market due to the availability of the data and with no intention to discuss differences in other geographical markets. Also, a specific physical content product should be the object of analysis and its digital counterparts to test the initial hypothesis developed out of the existing theory. A wider scope might have distorted the results due to inherent differences between different content products. Taking one specific product also limited the target group as this research was set out to test for customers that are familiar with the physical version. This was done to give specific implications for a company with regard to their existing customer base which often enough differs largely from a potential customer group. So overall, the aim was not and could not have been to investigate the Swedish population as a whole as the concept of consumer perceived value is very individual which will be further outlined in the theoretical section of this thesis.

Based on the perceived value concept a clear distinction was made from the beginning that this thesis will cover value solely from a customer perspective. Soman and N-Marandi (2010) stress the difference between value that a firm creates *for* a customer and value *of* a customer

to the firm. The latter is often related to the popular term "customer lifetime value" in Customer Relationship Management literature (Dahlén et al., 2010) and will not be part of this thesis. Nevertheless, it should always be salient to the reader that value is a "two-way street" (Soman & N-Marandi, 2010) consisting of effort the company undertakes to grow the value *for* the customer balanced with the attempt to eventually grow value for the company *from* the customer.

## 1.6 Thesis Outline

This thesis is divided into seven sections - introduction, theory, hypothesis generation, methodology, results and analysis, discussion and conclusion. The *introduction* chapter above included a current background on the topic, the reasons why the topic needs exploration as well as expected contributions to the marketing world. Finally, the chapter addressed the delimitations of this particular study. *Chapter 2* will provide the theoretical foundations of this thesis and the evidence behind the hypothesis. *Chapter 3* contains the hypothesis developed from these literature findings. *Chapter 4*, the methodology section, will explain the approach of this study and how the participants were chosen. Additionally, descriptions of the experiment design, manipulations, sampling, data collection and information on the analytical tools and methods used will be provided. *Chapter 5* will address the results and analysis of the experiment, as well as discuss whether or not the hypotheses are supported. Further on, *chapter 6* will illustrate how the analysis of the results can be seen in the context of existing literature and what conclusions can be drawn from this. Finally, the *conclusion* will include practical implications, potential criticism of the experiments as well as an outlook for future research opportunities.

# 2. Literature Review / Theory

*In this section an overview of the theoretical foundations of the study is given. More specific, an overview of the differences between physical and digital content products will be given and previous research on the topic will be shown. Furthermore, two concepts that seem to be critical for the success of digital products –ownership and perceived effort- will be introduced. Eventually, the hub concept of consumer perceived value is discussed.*

## 2.1 Digital Content Products

> *"Every business today competes in two worlds: a physical world of resources that managers can see and touch and a virtual world made of information".*
>
> (Rayport & Sviokla, 1995, p. 75)

Rayport and Sviokla were among the first ones to clearly distinguish the two *worlds* that have been established with the "inception of the World Wide Web in the early 1990s" (Baehr & Schaller, 2010, p. 5). They refer in their work to the marketplace, which is considered to be the traditional Brick & Mortar business of companies, and the newer marketspace, a virtual realm build on bits and bytes. At the core of the marketspace stands the term *digital*, which with regards to Hilmes (cited in Martin & Creeber, 2009, p. 46) "simply means that information is broken down into series of 1s and 0s".

As the authors are specifically interested in the value change between a physical product and its digital counterpart, this paper will look at a sub-category of digital products, *digital content products* as they can be characterized by having counterparts in the real world, which are hard to find for other sorts of digital products, e.g. software. Rowley (2008, p. 521) defines digital content as "bit-based objects distributed through electronic channels", while Kim et al. (2010, p. 79) see digital content as "information and experiences that provide value for users […] which can be accessed by consumers through […]digital media". Both definitions are suitable

for the examinations in this paper, as they implicitly state that digital content products provide a sort of content for the user and always need some electronic device to be accessed. Therefore, they can be found in the category of products with a completely electronic fulfillment process with regards to the taxonomy of e-commerce proposed by Francis and White (2004).

One distinct characteristic that contrasts digital content from physical content is its reproducibility and multiplicability (Creeber & Martin, 2009). No digital content is lost when given to others nor does it diminish during consumption, thus its sharing can – and often will – cause its increase (Rowley, 2008). Digital content is furthermore found to be non-excludable and non-depletable, hence its consumption by one individual does not interfere with the availability to others (Chan-Olmsted & Chang, 2003).

In contrast to physical content that is always manifested in an object (a book, music-CD, magazine, etc.) and can be examined with all senses, digital content cannot be touched, held or smelled. This has severe effects on how detailed consumers can perceive the products and feel a sense of control and security about them (Avey, Avolio, Croosley, & Luthans, 2009). Especially tactile examination gives humans clarity about what a thing is and how to evaluate it. Furthermore, touch is an important sensation and leads to an emotional response (Schiff & Foulke, 2009).

Considering these aspects, digital content products rather show similarities with information than with physical products as both are highly elusive in nature (Rowley, 2008).

Overall, one can conclude that "the processes for creating value are not the same in the two [physical and virtual] worlds" (Rayport & Sviokla, 1995, p. 1). Therefore, it is worthwhile for researchers and practitioners alike to set out to understand the differences between these two

worlds. Particularly, an understanding of what stands behind value could be relevant to build successful and comprehensive strategies to future success.

### 2.1.1 **What has been explored**

Most of the studies on digital content products focused on business models that are relevant for success in the news-publishing, magazine and music industries (e.g. Berry 2006; Fetscherin & Knolmayer 2004; Premkumar 2003; Swatman, Krueger, & van der Beek, 2006; Vaccaro & Cohn 2004). One general preoccupation of these studies has been the cannibalization of traditional physical products by digital content. Findings indicate hereby that accessibility and convenience have a strong influence on why people prefer either digital or physical products.

A variety of researchers looked into this subject under terminologies such as efficiency (Zeithaml et al., 2002, p. 366) or ease-of-use (Yoo & Donthu 2001; Collier & Bienstock, 2009), which can be characterized as the absence of effort. One common finding is that the reduction of cognitive effort has a noticeable effect on the overall assessment of e.g. a homepage and is likely to affect long term business success. Collier and Bienstock (2009, p.264) for example perceive ease of use to be "one of the most important factors for consumers on the Internet".

Swatman et al. (2006) found that there exists an increasing amount of free content on the Internet produced by private persons and companies without the intention to earn revenues on a business scale. Over the years users have been accustomed to this free content and information by itself can be regarded as a commodity that cannot be charged for. Linked to the low barriers of publishing on the Internet, Baehr and Schaller (2010, p. 125) find that it is hard to assess the quality of digital information and "conventional print-based content still

carries a greater ethos to its digital varieties, particularly in terms of research value in the academy".

Other studies relate to the effect of peer-to-peer file sharing, and CD burning on music sales and the availability of free news content on newspaper revenues (Andersson & Rosenqvist 2006; Fetscherin & Knolmayer 2004; Peitz & Waelbroeck 2004). This raises the question of who actually controls digital content and how to protect it sufficiently from being shared without authorization. It is yet unclear how and if digital ownership rights can be assigned and the lawful owner can be given a significant advantage over a person who received an illegal content copy (Stini et al., 2006).

Analyzing the literature presented above, it becomes obvious that perceived effort and ownership are two critical concepts for the success of digital content products. The authors therefore believe that these concepts might be suited to increase the value perceived by consumers and deem it important to present a background on what literature has explored for both of the concepts.

### 2.1.2 **Ownership**

Ownership appears to be a strong need for people, which has widely been discussed in literature. Researchers point out it might be an innate human psychological trait (Linssen, van Kempen, & Kraaykap, 2011), and some even explain it with biology (De Fraja, 2009). Overall, it can be said that people who feel a sense of ownership perceive a strong connection between themselves and the target of ownership (Dittmar, 1992) and this feeling occurs independently of the legal rights or the urgent need to own the target (Furby, 1980). A prominent example of how ownership affects our perception of the world is Tversky and Kahnemann's (1991) endowment effect theory. The two researchers found in an experiment that contestants were willing to pay less for an object they did not possess than they wanted in

exchange for the same object as soon as they possessed it. It has thus been shown that ownership directly influences the perceived value of objects as soon as we own them. Dittmar (1992) finds it common for people to experience such strong connections between themselves and various targets of possession such as houses, cars or other that these become a part of the extended-self. As Sartre (1943, pp. 591-592) correctly remarks, "the totality of my possessions reflects the totality of my being ... I am what I have ... What is mine is myself". When an object becomes a possession Belk (1988) argues that having and being are merged together and possessions play a superlative role in knowing what we have achieved in our past and therefore who we are in the present. Therefore we deliberately seek to express and confirm our personality with what we have. Among others, Marsh (2011) argues that ownership is hence no goal in itself but merely a way to fulfill our need for social status and the recognition of others.

The visible consumption of goods in order to enhance one's social standing is generally known as conspicuous consumption (Grace & Griffin, 2009) and already in 1899 Veblen (cited in Sheth et al., 1991, p. 161) noted that "goods have a symbolic or conspicuous consumption value in excess to their purely functional value".

It is of importance to notice that psychological or perceived ownership is not equal to the legal right of possession and only psychological ownership has important attitudinal, emotional and behavioral consequences for those who experience it (Avey et al., 2009). Pierce, Kostova and Dirks (2003, p. 5) define psychological ownership as the "state where an individual feels as though the target of ownership or a piece of that target is 'theirs'" and suggest that it consists of three dimensions: belonging, self-efficacy and self-identify. Objects that can satisfy these motivations are thus better candidates for psychological ownership. According to them, attributes of the target such as attractiveness, accessibility, openness and

manipulability make psychological ownership more or less likely. Chaudhuri, Mazumdar, and Ghoshal (2011) also note that the feeling of ownership occurs only when the object is perceived as being under the control of the individual.

### 2.1.3 **Effort**

The basic cost of consumption, and thus the sacrifices to make when obtaining a good, can be seen as money, time and effort (Downs 1961, cited in Berry et al. 2002) and there are several indications in literature (Kelley 1958, Kotler & Zaltman, 1971; Seiders, Berry & Gresham, 2000) that a consumer's energy is part of the resources they have to give up to acquire a good and hence effort is a distinct non-monetary cost. The effort that is exerted into an exchange has been found to be directly correlated to the expected benefits of the exchange: The more effort a person exerts into an equitable exchange, the more he or she expects in outcome as a result of the exchange (Oliver & Swan, 1989). Jacoby, Szybillo and Berning (1976) point out that besides time and money consumer choices are more and more influenced by constraints on cognitive abilities. As consumers have to deal with an overwhelming information input, time and effort are becoming increasingly precious resources (Berry, Seiders, & Grewal, 2002). Especially in the context of digital content, the overall costs of a good have been found to regularly extend beyond the pure monetary price to the need to engage in self-service and the learning process connected with accessing, using and experiencing the digital content (Rowley, 2008).

In a digital environment, the overall effort connected to a product consists mostly of cognitive effort, which Bettman, Johnson, and Payne (1990) predict to be a number of elementary information processes in the mind of the consumer and Berry et al. (2002) describe as energy expenditures that have a strong influence on a consumer's decisions. This cognitive form of effort has been the focus of a variety of studies in different fields, for example economics

(Conlisk, 1996), psychology (Newell & Simons, 1990) or decision theory (Kahneman, Slovic & Tversky, 1982). A consistent finding is that humans have only limited cognitive resources, which they allocate carefully. People are thus oftentimes willing to forgo some of a good's benefits to conserve cognitive effort and satisfy their needs in a more convenient way, as Gabarino and Edell (1997) point out. One prominent example of the potential effects of reducing cognitive effort is the success of Apple's iPhone. Consumers all around the world are willing to pay horrendous premiums in price, for a product that is clearly inferior to competition on a feature basis, but it has a nice design and is "extraordinarily simple to use"(Engadget, 2007).

## 2.2 The Value Concept

*"Price is what you pay. Value is what you get."*

-Warren Buffet by way of Ben Graham (2008, Letters to shareholders)

During the last 20 years, value, and particularly customer value and its creation within companies, became a widely discussed topic. In 1991, the Business Week described customer value as "the new marketing mania" (cited in Eggert & Ulaga, 2002). Holbrook adds in 1994 (p. 22) that value has always been "the fundamental basis for all marketing activity". Since then, many authors have affirmed that creation of customer value is fundamental to companies' long term success and for gaining a competitive advantage (compare Rowley, 2008). Albrecht (1992, p. 7) for example claims that "the only thing that matters in the new world of quality is delivering customer value".

The nowadays most frequently used definition of value is the one proposed by Zeithaml (1988, p. 14):

*"The customer's overall assessment of the utility of a product based on perceptions of what is received and what is given".*

Zeithaml stipulates the 'give' and 'get' components in this definition, emphasizing value as a personal tradeoff between sacrifices and benefits, which makes value a *'subjectively perceived construct'* (Woodall, 2003).

### 2.2.1 **Consumer Perceived Value**

In line with the definition above, this thesis sets out to make use of a specific sub-construct of customer value which is frequently called Consumer Perceived Value (CPV). This concept highlights the individual perception of value which differs due to personal preferences and views of the individual customer from the value that a company sets out to create (Zeithaml, 1988; Woodruff and Gardial, 1996). Overall, CPV is a valid concept to help increase the understanding of the various aspects that customers deem important in a product and to help reveal the motivations behind their value assessment (compare Gill, Byslma, and Ouschan, 2007).

A well-fitting description is provided by Monroe (1990) who identifies the ratio between perceived benefits and sacrifice:

$$\text{Customer-Perceived Value} = \frac{Perceived\ Benefits}{Perceived\ Sacrifice}$$

The popular 'value-in-use' theory as proposed by Grönroos (2008) also points out that value is subjective and individual and therefore varies among customers and on different occasions. Moreover, Woodruff and Gardinal (1996) assert that value attaches to an individual's experience (e.g. consumption) and pertains not to the acquisition of an object. And correspondingly, Vargo and Lusch (2004, p. 6) maintain that "value is defined by and co-

created with the consumer" and companies can only aim for creating value propositions that are superior to competitor ones.

When it comes to *value in business markets*, Anderson and Narus (1998, p. 54) stress "the worth in monetary terms of the technical, economic, service, and social benefits a customer receives in exchange for the price it pays for a market offering". With regards to that, the *willingness-to-pay* of a customer is an interesting economic expression of how much customer value a product. Stini et al. (2006, p. 1) also emphasize that "perceived value of content often depends on the effort required to obtain it". Whereas other studies realize that value is often the outcome or combination of how scare a good is and how high the demand is, how much/many people want it. So if people believe something is valuable (because not many people have it – hence, it seems to be difficult to get it) actually makes it valuable for the believer. In this sense value is always a perception and never a cost. (Marsh, 2011)

It should also be noted that perceived value is quite different from satisfaction. First, satisfaction is always a post-purchase measure whereas "perceived value occurs at various stages of the purchase process" (Sweeney & Soutar, 2001, p. 206). Consequently, value perceptions can be evoked without the product or service being sold or used. Secondly, Eggert and Ulaga (2002, p. 109) remark that customer satisfaction measurement is "limited to a tactical level, providing simple product improvement and a correction of defects and errors of existing products and services". Likewise, Woodruff (1997, p. 139) explains that "if consumer satisfaction measurement is not backed up with in-depth learning about customer value and related problems that underlie their evaluations, it may not provide enough of the customer's voice to guide managers where to respond". Therefore, it becomes clear that perceived value is a more valid construct "to provide a holistic picture of what customers actually value about

their overall experience" (Gill et al., 2007, p. 258) and to extract deeper and strategically relevant implications for marketing practitioners.

Based on these definitions and insights, this thesis will build upon the following consolidated definition of value:

*Consumer Perceived Value is the trade-off between the multiple benefits and sacrifices perceived by an individual before, during and after a consumption situation, compared to alternative offerings in the marketplace.*

### 2.2.2 **Measuring Consumer Perceived Value**

Even if the importance and validity of perceived customer value has been discussed widely in literature, an empirical measurement of perceived value can be found in just a handful of papers (Sweeney & Soutar, 2001). And if, it is often measured with one dimension comparable to: '*Overall, how valuable is the base product (functionality) to you?'*, or a limited number of items representing an overall perception of value (Tripat, 2008; Patterson & Spreng, 1997; Eggert & Ulaga, 2002; McDougall & Levesque, 2000).

Among others, Petrick (2002) stresses certain problems with a one-dimensional measure, like assuming "that consumers have a shared meaning of value" (Petrick, 2002, p. 122) which is questionable. Woodruff and Gardial (1996) conclude that one-dimensional measures of perceived value lack validity. Furthermore, a simple rating of value gives no directions on how to improve value which leaves a blank spot particularly for practitioners.

Sinha and DeSarbo (1998, p. 236) note that "perceived value is a more obscure and complex construct […] whose dimensionality requires more systematic investigation". They unmistakably state that "perceived value is clearly a multidimensional construct derived from perceptions of price, quality, quantity, benefits, and sacrifices" (1998, p. 237).

Even before that, Sheth et al. (1991) propose consumer choice as a function of multiple consumption value dimensions, making varying contributions in different choice situations depending on *who* chooses, *when* somebody chooses, and *what* somebody chooses. In their research paper "Why We Buy What We Buy: A Theory of Consumption Values" they identify five dimensions and tested them for their validity among various product categories. Each of the dimensions will be described in the following:

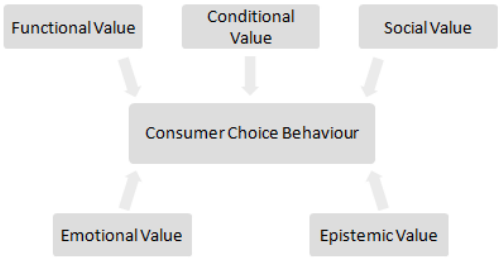



*Figure 1: The five values influencing consumer choice (Sheth et al., 1991)*

**Conditional Value** is describe by Sheth et al. (1991) as dimension that becomes relevant for a specific situation or set of circumstances facing the choice make such as an illness (e.g. ambulance services), "once in a lifetime" events (e.g. wedding gown), or more subtle conditional associations (e.g. popcorn at the movies).

**Social Value** is connected to products that build associations with positively or negatively stereotyped demographic, socioeconomic, and cultural-ethnic groups. Social Value is particularly relevant for highly visible products (e.g. clothing, jewelry) and goods or services to be shared with other (e.g. gifts, products used in entertaining). Sheth et al. (1991, p. 161) highlight that "even products generally thought to be functional or utilitarian (e.g. kitchen appliances) are frequently selected on the basis of their social value".

Products acquire **Emotional Value** when they arouse feelings or stimulate an affective state. Here, consumer choice may be driven by non-cognitive and unconscious motives.

Whereas, **Epistemic Value** relates to a product's capacity to arouse curiosity, offer novelty and/or satisfy a desire for knowledge.

Finally, the **Functional Value** dimension is presumed to be the primary driver of consumer choice. A product gains functional value through the possession of salient functional, utilitarian, or physical attributes such as reliability, durability, and price.

Sweeney and Soutar (2001, p. 204) take this conceptual framework and developed a "more practical and operational" multi-dimensional CPV scale, namely, the 19-item measure PERVAL. One major difference is that they split the **functional dimension** into the sub-factors **Price** and **Quality** as they contribute separately to perceived value and should therefore be measured separately, price having a negative effect and quality having a positive one. Overall they use four dimensions: **Price, Quality, Emotional, and Social**. The results from Sweeney and Soutar show that the proposed multi-item value scale explains three behavioral outcomes relating to customer choice better than an "overall value for money" item emphasizing ones more the need for the more detailed measure.

Nevertheless, none of the proposed scales have been used, to measure CPV of a digital product. Therefore a clear opportunity is presented to investigate digital products from this downright worthwhile perspective to add a new insight into how digital products differ in terms of value from their physical counterparts and how this knowledge can be used to increase the value during the process of digital product developments.

# 3. Hypotheses

*In the following chapter the hypotheses will be generated based on the literature review presented in the previous chapter. The hypotheses are split by the two initial research questions.*

Linking the above presented concept of consumer perceived value with the research findings on digital products, the authors developed the following hypothesis to be tested with this study.

## 3.1 Hypotheses for Research Question 1

*How does a consumer's perception of value change when a physical product is taken digital?*

*Are different value dimensions affected by the digitalization?*

When accessing content in a digital form, the consumer is stimulated merely through visual and auditive impressions of the product and no tactile contact with the product itself is possible. The literature review highlights that tactile interaction with objects is a crucial part in exploring and judging objects. The lack of touch in digital products is thus likely to have a negative influence on consumer's curiosity. The Internet furthermore carries a product mix of well-known companies and small or even private entities and the assessment of the reliability of content in digital media is perceived to be hard. Thus, the ability of digital content products to provide reliable knowledge is more likely to be questioned. It is therefore expected that a digital product cannot satisfy a consumer's need for epistemic value – arouse curiosity or stimulate learning – equally well as a physical product.

***H1a)*** *The perceived epistemic value* ***is higher for the physical product than its digital counterparts.***

Products are also oftentimes consumed to demonstrate one's identity and social standing and provide value through their conspicuous consumption. A necessity for this is that the product consumption is visible to other persons, which is harder for basic digital products. They are mostly consumed in private at home and often stored invisibly for others on a hard-drive. Whereas, physical content products can easily be taken to different social gatherings and engage several people looking at them together without being dependent on an electronic device to view the content. The social value a digital product provides is thus expected to be inferior to a physical product that can be stored demonstratively in a public place, shared with peers and be consumed straightforward in front of others.

*H1b) The **perceived social value** is higher for the physical product than its digital counterparts.*

The price dimension of value demonstrates how reasonable the customer perceives the monetary and non-monetary cost for this product. Digital products generally have lower production costs than physical products and consumers therefore often expect them to be cheaper. Furthermore consumers are used to free digital content on the Internet and might therefore have a lower price expectancy for digital products in general, leading to the impression that they should give up less resources to obtain the same benefits as for a physical product.

*H1c) The **perceived price value** is higher for the physical product than its digital counterparts.*

Digital products are due to their non-material form hard to grasp for a consumer and show a high elusiveness. Consumers are detained from touching the product and assess its quality through their tactile senses, which can be an important cue to gain information on the overall quality of an object. Apart from this, it is difficult for the digital version that is viewed on a

computer screen to compete with the sharp, high-definition print quality of a physical content product. The overall perceived quality of the product is thus expected to drop when the content is digitalized.

*H1d) The **perceived quality value** is higher for the physical product than its digital counterparts.*

The emotional value could suffer from similar shortcomings for the digital version as explained with the qualitative value. Emotions are stronger the more senses are involved in evoking them and the stronger these stimuli are, so the lack of touch and inferior visual quality may have an influence on the emotions evoked by the product. Value is in general said to develop with the consumption experience and not simply with the acquisition. So a less immersive product interaction might lead to a less meaningful experience. Moreover, a new digital product build from an existing physical product is always a novelty and consumers tend to feel un-relaxed about new products and need to undergo a process of adoption, before they are able to enjoy its benefits and develop positive emotions (Kalish, 1985).

*H1e) The **perceived emotional value** is higher for the physical product than its digital counterparts.*

## 3.2 Hypotheses for Research Question 2

*What role do certain concepts such as perceived ownership and perceived effort play for the value perception of a digital product?*

General attributes of digital products are their intangibility, their reproducibility and multiplicability hence evoking the feeling of individual ownership – nobody else has it! – is tough. As value is oftentimes linked to the scarcity of a product this unlimited amount of multiplicability might reduce the value a consumer perceives from a digital product.

Furthermore, the high elusiveness leads to a state in which the consumer does own the legal right of usage of a product, but does not experience psychological ownership. Literature has shown that psychological ownership of a product has positive influences on a product's evaluation. Persons can develop strong emotions towards products they own and through ownership and conspicuous consumption of products an individual can communicate his or her social status to other people. Also when an object becomes a possession it is often attached with personal emotions, memories and physical changes that distinguishes it from all the other products on the market and make it unique. Therefore by increasing the psychological ownership of a digital product through enhancing its controllability, accessibility, attractiveness and the ability to identify oneself through the product, an increase in perceived value is expected.

*H2a) Increasing the **perceived ownership** for a digital product increases the Consumer Perceived Value compared to a basic digital version.*

The value a product provides to a consumer is a trade-off between benefits and sacrifices. One basic cost of consumption is effort, which in the case of digital products mostly consists of the cognitive effort of acquiring and using the product. Therefore, by reducing the cognitive effort a digital product requires one can expect to reduce part of the resources a user has to give up and in turn increase the perceived value of the product.

*H2b) Reducing the **perceived effort** for a digital product increases the Consumer Perceived Value compared to a basic digital version.*

# 4. Research Method

*This chapter will outline the strategies that have been chosen based on their appropriateness to assess the scientific phenomenon and its underlying measurement model. To start with, the research design will be described, followed by information about the partner company this thesis was written in cooperation with and details on the experiment and associated manipulations. Further, the approach to sampling is outlined, as well as the process of data collection. Finally, the tools for the data analysis are described and the data quality is discussed.*

## 4.1 Research Design

To answer our proposed research questions an experimental research design was chosen. An experiment is the "deliberate manipulation of [independent] variables" (Bradley, 2007, p. 283) whereas the effects on (a) dependent variable(s) are tested. The advantage of this form is that the researcher has great control over the independent factors which increases the likelihood that the interactions and relationships discovered with dependent variables are "true" relationships (Churchill & Iacobucci, 2005). Furthermore, advantages of an experimental design are precise measurements, a straightforward analysis and the random assignment of respondents (Andersson, 2011). The disadvantages, issues like lack of strength of independent variables (e.g. weak manipulations) and a dubious degree of task realism, were also taken into account when deciding on the design. Anyhow, the advantages outweigh the potential shortcomings that can be mitigated throughout the process. Eventually, Churchill and Iacobucci (2005, p. 128) highlight that "an experiment can provide more convincing evidence of causal relationships than exploratory or descriptive designs". Therefore, alternative research designs were ruled out at the very beginning due to their inappropriateness considering the purpose of this study. Overall, this thesis follows a deductive logic since theory (e.g. value research) was used to guide the development of the

hypothesis (Grover & Vriens, 2006). With regard to Bryman and Bell (2007) both, theory and hypothesis together then drive the process of gathering data.

To decide on the specific research strategy, qualitative and quantitative considerations were discussed. Considering that a quantitative approach only, due to a large random sample, delivers quantifiable results on which basis hypothesis can be empirically supported or not supported and results on the cause-and-effect relationship between the variables can be extracted (Wilson, 2006) this method was chosen. Due to that, qualitative research was limited to initial expert interviews and research about the partner company which it was decided to work with. As this paper seeks to specifically analyze the effects occurring when a physical content product is taken digital, it was important to find a partner company that offered such an established product. The partner company was therefore chosen based on the opportunity to analyze such a traditional physical content product that customers have been accustomed with over a period of time. The company found intends to take this product digital in the near future, which presented a good setting in which our research could be positioned in.

### 4.1.1 The Partner Company and Exploratory Research

Before the actual experiment was set in action, a small set of exploratory research was performed. Therefore interviews with the partner company were conducted[1] as well as with experts in the field of digital content products to provide insights and generate an understanding of relevant background information on the product that will be taken as the unit of analysis for this study (compare Malhotra, 2010). The main products of our partner company are traditional (physical) collection cards which they sell in Sweden and many other countries worldwide. The company has a long and successful history with those cards and

[1] Kept anonymous due to confidentiality reasons

starts each year different collection for various categories. One of their most successful categories is cooking and baking recipes. Due to the high popularity in the past, present and most likely also future of this category, it was chosen for this study. Based on existing customer research from the partner company it is shown that the target category is very diverse, ranging from 25 up to 80 year old people, pre-dominantly women. The product itself attracts this quite heterogeneous group as food and cooking is a matter, even if not an interest, for almost everyone. Anyhow, limitations to generalize the results are imposed by the specific category product, collection cards. The effects on the external validity will be discussed in the section about *Data Quality* further below and will also be accounted for in the discussion of this thesis.

### 4.1.2 Experiment and Manipulations

The experiment was set out to test how the dependent variables are affected due to the manipulation of the independent variables. Based on the developed hypothesis the following independent and dependent variables were to be tested.

| Independent Variables | Name | Definition |
|---|---|---|
| **Physical** | Physical Product (Group Physical) | This group was asked to answer all questions with regards to the existing physical product of the partner company. |
| **Digital** | Digital Basic Product (Group Digital Basic) | This group was asked to answer all questions with regards to a 1-to-1 digital copy of the physical product. |
| | Digital Manipulation Ownership (Group Manip O) | This group was asked to answer all questions with regards to a manipulation of the digital basic product that increases the perceived ownership for the consumer. |
| | Digital Manipulation Effort (Group Manip E) | This group was asked to answer all questions with regards to a manipulation of the digital basic product that decreases the perceived effort for the consumer to gain and handle the product. |

*Table 1: Overview Independent Variables*

| Dependent Variables | Name | Definition |
|---|---|---|
| | Perceived Value, expressed with five dimensions. | The scales used measure the perceived value on each of five dimensions: Social, Quality, Epistemic, Emotional and Price. The dimensions are in accordance to Sheth et al (1991) and Sweeney & Soutar (2001). |

*Table 2: Overview Dependent Variables*

Additional to the main independent and dependent variables some control variables were introduced. Those will be used later to describe the sample and establish that there are no significant differences for the four groups based on the independent variables.

| Control Variables | Name | Definition |
|---|---|---|
| | **Age** | Age was measured on a continuous scale. |
| | **Sex** | The gender was asked to be stated (1=female; 2=male). |
| | **Devices in use** | The participants were asked to indicate which devices they own: Laptop, PC, Smartphone, TV with Internet access, Tablet. |

*Table 3: Overview Control Variables*

On the basis of these variables, the experiment was carried out with four groups to which participants were assigned to randomly. The main survey, used to measure the dependent variables, was identical among all groups to ensure that truly only the manipulated stimuli (product exposed to) differed between the groups. All questions in the survey were kept exactly the same. Tests to compare the groups against each other in the analysis section were therefore facilitated and straightforward.

As can be seen above, four different stimuli were used. All respondents were informed in the initial call to take part in the survey in which they will be asked questions about a recipe collection product, which product was not specified in more detail. Once the respondent

started the survey they were exposed to the product description on the initial page, hence one of the four possible alternatives.

*Group Physical* received an introductory statement (e.g. price, name) concerning the existing product they are accustomed to plus some pictures to stimulate their familiarity again in case they have not used it in a while.

The digital groups received the same opening sentence as *Group Physical* informing the survey participant that we are going to ask some questions about product X[2]. Then they were asked to imagine that they are now subscribed to a new digital version of the product. This was followed by pictures and the information that the product can be used for example on their personal computer or Smartphone.



For *Group Digital Basic*, the description ended with stating the price (kept same from physical version) and the information that they receive their collection cards every three weeks (as with the physical version) on the digital unit they prefer. It was intended that the participants are simply exposed to a one-to-one copy of the existing product but digitalized. All further information could have distorted this one-to-one copy intention (Malhotra, 2010).

*Group Manipulation Ownership* and *Group Manipulation Effort* received more detailed descriptions in addition to the identical information that *Group Digital Basic* received.

The product for *Group Manipulation Ownership*, encompassed various manipulations that improve the perceived ownership according to Pierce et al. (2003) in that the customer can

- build up an own unique recipe library online
- customize recipes just as they like them best (e.g. add, change ingredients, etc.)

[2] Product name left out as partner company wants to stay anonymous

- add personal notes, pictures of cooked dishes
- share them with friends and relatives online
- have steady access to their personal library and that the data is protected.

In contrast, *Group Manipulation Effort* received a description that emphasized easy and convenient access and that the product requires only marginal cognitive effort. Cue words used were

- from any device and at any time
- easy, fast, without effort
- access to the complete recipe library with extensive search function
- most convenient way of finding exactly what you are looking for
- only few clicks, no lengthy comparing between hundreds of different sources

## 4.2 Approach to Sampling

For the sampling process we followed four common steps as suggested e.g. by Wilson (2006), Churchill and Iacobucci (2005) or Malhotra (2010).

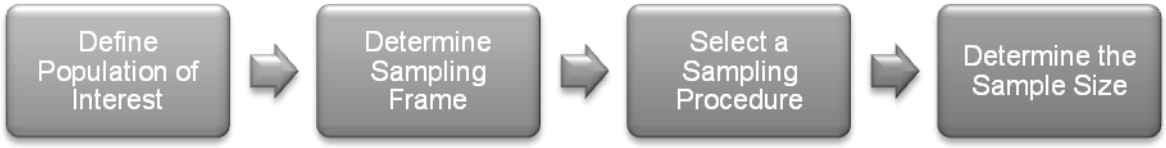



*Figure 2: Overview Sampling Process*

1. Define the population of interest

The population of interest is the total group of people that the researcher wishes to study and obtain information from which normally reflects the target group or potential target market for

the product being researched (Wilson, 2006). This meant in our case to involve people that are current customers or have been customers within the last six month of the product. Including non-customers would potentially distort the value judgments immensely, as the familiarity with the product could be a decisive extraneous variable. In line with the objectives of this study to explore initial different value perceptions between a traditional physical product and its digital counterparts it was out of scope to include non-customers. Furthermore, the study was limited from the beginning to the market of Sweden which additionally limited the population of interest.

2. Determine the sampling frame

For the customers of the product in question, the sampling frame was readily available with the access to the customer database our partner company provided us. The customer catabase provided a complete representation of the population of interest also called target population, which is with regard to Malhotra (2010) the definition of a sampling frame. Also, it proved to be a universal way to get in contact with each and every one of them by using the email address. Furthermore, as for this thesis the sampling frame is consistent with the target population the necessity to treat the sampling frame error is dissolved (Malhotra, 2010).

3. Select a Sampling Procedure

First, due to the requirements of an experimental design, each respondent can only take part once and therefore a *sampling without replacement* was the only appropriate choice (Malhotra, 2010).

Second, for the customers a *probability sample* was employed to ensure randomization in the light of increasing the validity of the data. This meant that via a *simple random sampling*, were "every possible member of the population has an equal chance of being selected for the

survey" (Wilson, 2006) 4000 customers were randomly invited to participate which resulted in a final number of 134 participants, equivalent to a response rate of 3.4%. A random assignment to one of the four questionnaires was undertaken. This ensured similar means for control variables like age, sex and devices-in-use among all groups (see variable overview in *part 4.1.2* and *Appendix I* for detailed results*).* All in all, the total sample represented people from the age of 22 up until 80 which accounted for a mean value of 52.64 (SD = 15.050), 66% females compared to 34% males and about 50% of the sample use 2 or more different electronic devices.

4. Determine the Sample Size

With regard to the sample size, it is most important to consider the purpose of the study to determine what an appropriated sample size is, hence which number of elements to include in a study (Malhotra, 2010). For our purpose of statistically analyzing the data by comparing means of the different groups the Central-Limit theorem is relevant, which allows for a normal distribution if the sample size is large enough (Churchill & Iacobucci, 2005). The rule of thumb states that each manipulation group should have a sample size of about 30 people (Aczel & Sounderpandian, 2006). Overall the sample size amounted to 134 people with about 30 in each manipulation group[3].

Finally, as mentioned before, it was important that no respondent was exposed to more than one survey to not distort the answers (Söderlund, 2010). This was ensured, a) by ticking the Qualtrics option that once started the survey, no second survey could be started and b) by

[3] *Group Physical=29; Group Digital Basic=32; Group Manip Ownership=34; Group Manip Effort=39. To be noted: For certain analysis the group size was reduced due to missing cases which were excluded pairwise. The lowest sample size was 20 which is a critical low number so the results produced should be interpreted with caution.*

tracking the IP addresses it could be double-checked that no respondent answered two surveys by accident.

## 4.3 Data Collection

Qualitative Pre-Study

As mentioned beforehand, a small exploratory part in the form of qualitative interviews was conducted prior to the true experiment. For the interviews, semi-formal interview guides were used to ensure that all important topics were covered (Bryman & Bell, 2007) while still leaving enough room for following spontaneous leads that emerged during the interview.

The Qualitative interviews were also used to conduct a pre-test on the quantitative questionnaire to rule out any misunderstandings or irritations caused by the description of the manipulations or the questions itself. Some small adjustments were made which mainly could be linked back to ambiguous wordings that came up with translating the original questions from English to Swedish. The translation of the questions was necessary due to a request from our partner company. A translation made sense in general, as all persons asked were Swedish and this should rule out any language problems.

Quantitative Study – The Questionnaire

To conduct the experiment it was decided to set-up a self-completion questionnaire, which was the most promising choice to get the number of respondents that were needed weighted with the potential disadvantages (e.g. response quality, response rate, response time; Bradley, 2007). To mitigate the negative aspects, reminders were sent out one and a half weeks after the original mailing, incentives (a lottery of a camcorder and pie moulds) and a friendly and motivating cover email. As mentioned in the chapter about *Sampling*, a customer database

from the partner company was used. The email address was the only common way of contacting participants in a timely manner; hence the questionnaire was conducted via an online link sent out by email. The program Qualtrics was used to set-up and administer the questionnaire. As mentioned before, the study was completely in Swedish.

As the main purpose of the questionnaire was to test the different perceptions of value towards the different independent variables (e.g. physical product vs digital product), a value scale testing the different **dimensions of value** as discussed in section 2.2.2 was employed. Which value dimensions to analyze was based on the conceptual framework of Sheth et al. (1991) that was discussed in the literature review as well as the two connected studies from Sweeney and Soutar (2001) as well as Gill et al (2007).

All in all, the Social Value dimension the Emotional Value and the Epistemic dimension were taken as given by Sheth et al. (1991). However, Sweeney and Soutar (2001) leave out the conditional value dimension and in line with that it is also excluded for the purpose of this thesis. Conditional Value is described by Sheth et al. (1991) as dimension that becomes relevant for a out-of-the-ordinary situation such as illness or some specific social situation therefore describing a specific case of other types of value (Sweeney & Soutar, 2001). This thesis sets out to use a general value measure and in this sense conditional value is seen as less critical. And due to the reasons introduced in the literature, this thesis splits the functional value dimension into quality and price value (compare Sweeney & Soutar, 2001; Gill et al., 2007). Overall, five different value dimensions

**Social – Emotional – Epistemic – Price – Quality**,

were measured via a multi-item approach with items compiled by the studies mentioned above.

In the form of a pre-test, each item used later in the quantitative survey was tested against its usefulness and appropriateness during the qualitative interviews. This produced a short-list of e.g. a total of 19 items for the five value scales. A Likert scale, ranging from 1-7 (1= strongly disagree; 7 = strongly agree) was employed for all measures. Each value dimension was subject to Cronbach's Coefficient Alpha test to ensure that the items can be computed as one scale. All scales proved to be reliable as their coefficient ranging above 0.7 indicate appropriated relatedness (Pallant, 2010; Birks, 2009). Even if the epistemic scale consisting of three items has a Cronbach Coeefficient of 0.712, the SPSS function "Alpha Cronbach if item is deleted" showed that the reliability of the scale can be improved incrementally to 0.834 when the second epistemic item (Epi_2: "Using the product is something different or novel") is deleted. Therefore the Epistemic Value scale was only computed by 2 items.

Whereas the complete items formed as questions can be found in Appendix II, examples for each dimension and the Cronbach Alpha scores for the whole dimension are given below.

| Dimension | Example for Value Items | Cronbach Alpha |
|---|---|---|
| **Epistemic Value** | Using the product increases my curiosity in cooking. | 0.834 |
| **Social Value** | Using the product for cooking would make a good impression on other people. | 0.829 |
| **Price Value** | The product offers value for money. | 0.934 |
| **Quality Value** | The product is well made. | 0.877 |
| **Emotional Value** | Cooking with the product makes me feel good. | 0.924 |

*Table 4: Examples of Value Items*

## 4.4 Data Analysis

For the data analysis we employed the statistical software package *IBM SPSS Statistics 19*. From the questionnaire program Qualtrics we could directly export the responses into SPSS. As we had four different questionnaires we used the "Merge File" option from SPSS to

combine them into one dataset. Before that, a *Group Variable* to denote the experiment group, was added to each of the four samples.

Before the use of any analytical tools, it was made sure that the data is in an appropriated form. *Editing* and *Coding* ensured that the output files were easy to read and interpret in the following (compare Bradley, 2007; Wilson, 2006). No inverse wordings were used therefore no adjustments had to be made for the scales.

First of all, a *screen for errors* in the categorical and the continuous variables was undertaken. For the Categorical Variables (*sex*, *devices-in-use*), frequencies including minimum/maximum and valid/missing cases was checked which produced no conspicuous output. For the continuous variables (*value* items, *age*), descriptive including minimum/maximum, mean scores and standard deviations were checked. As before with the categorical variables, no conspicuous outcome was found.

As explained above, the reliability of each scale was tested via *Cronbach's Alpha* and approved based on a higher level than 0.7. After that, the scales could be computed. by using the "Transform – Compute Variable" function in SPSS. The syntax for every computed scale looks similar to the following (Example for the Quality Value dimension):

```
* (Qua_1+Qua_2+Qua_3+Qua_4)/4 *
```

Each item for the particular dimension is added up and the scales is directly divided by the item number so that the total scale scores are still expressed on a Likert Scale between 1 and 7.

After the initial procedures, the hypothesis could be tested by *running independent samples t-tests.* The results show whether the groups (independent variables) differ significantly for each of the dependent value variables.[4]

## 4.5 Data Quality

Theory discusses two main topics to describe a proper data quality in research projects: validity and reliability. In a general research setting validity refers to "whether the subject required to be measured was actually measured" (Wilson, 2006, p. 418) whereas reliability "refers to the extent to which a rating scale produces consistent or stable results" (Wilson, 2006, p. 413). Bryman and Bell (2007, p. 168) further highlight that "although reliability and validity are analytically distinguishable, they are related because validity presumes reliability". This implies that a measure has to be first and foremost reliable before it could even become valid which was applied for this thesis and can be seen in the following.

For the above proposed research methods the following quality measures are of particular interest.

### 4.5.1 Internal Consistency Reliability and Stability

*Internal Reliability* for the Experimental Design was achieved by employing established and tested multi-item measurement scales. The multiple question method increases the internal consistency of respondent's answers (Söderlund, 2005). To exclude the risk that the various items that are computed into one overall score are not related to each other, Cronbach's coefficient alpha (developed 1951 as a generalized measure of the internal consistency of a

[4] With regards to Pallant (2010) the option "exclude cases pair wise" was chosen to not reduce the number of observations unnecessarily further in the case of missing values. Therefore different degrees of freedom will appear in the result section.

multi-item scale) was computed for each scale. As noted before, the coefficient varies from 0 to 1 and according to Malhotra (2010, p. 319), "a value of 0.6 or less generally indicates unsatisfactory internal consistency reliability".

With regards to *Stability*, the questionnaire was subject to a pre-test to see whether it is necessary to exclude (or rephrase) e.g. ambiguous meanings of questions. This increases the chance that running the same study again would yield the same results, whereas the only true reliable measurement for stability is a re-test which has not been conducted so far as it extended the time frame of this thesis.

### 4.5.2 **Internal Validity**

In Experimentation's *Internal Validity* is defined with regard to Churchill and Iacobucci (2005, p. 131) as "the ability to attribute the effect that was observed to the experimental variable, and not to other factors". A necessary condition is therefore to control for extraneous variables which are sometimes also called confounding variables as they might cofound the results. One possible counteraction is randomization. In line with that, respondents were randomly assigned to one of the experimental groups instead of given them the option to select one product group themselves. With regards to Wyner (1997) this enables the researcher to infer that the differences in response to different products are caused by the presented stimuli rather than by selection or some other variable. Furthermore, acknowledged multi-item measurement scales were used. By asking more than one question on the same dimension and compute one score out of the answers the risk of misunderstandings or different perceptions is reduced. This does not only increase internal but also external validity.

### 4.5.3 **External Validity**

For experiments, external validity denotes whether the cause-and-effect relationships found can be generalized beyond the experimental situation (Churchill & Iacobucci , 2005). To achieve higher external validity, a random sample was drawn from the customer database.

Malhotra (2010) remarks that in marketing research often one type of validity has to be traded for another. In general, as this study is up until now unique in its kind it was important to determine first if there is any effect occurring for the chosen population of interest whereas the applicability to various other target groups could be tested in follow-up studies. As mentioned before, the product is something very specific and therefore limiting the options to generalize across other digital products. The results have first and foremost external validity within the stated target population and not beyond. Nevertheless, they can deliver significant insights into one digital content product category, namely collection cards, and connected to the population of interests consisting of 25 - 80 year olds, predominantly women.

# 5. Results & Analysis

*This chapter analyses the results of the statistical tests conducted in SPSS. Firstly, the results for the first research question, how CPV changes when a physical product is taken digital and what value dimensions are affected, will be presented. Secondly, the potential to increase the CPV by enhancing certain components of the digital product is described.*

## 5.1 Digitalization and Perceived Value Changes

The first research question tackles the perception of customer value that goes along with the digitalization of a physical product. Hypothesis 1 was set out to test the differences between CPV for a physical product and its digital counterparts[5]. CPV was tested with five value dimensions, each a multi-item scale that was indexed together.

The results indicate that the physical product (Group Physical) is perceived to be more valuable than its digital counterparts (Group Digital) in all value dimensions judging on the mean differences, whereas not all differences are significant. Figure 3 provides a graphical overview of the mean values for both groups ranging from one (strongly disagree) to seven (strongly agree). The detailed results can be found as a whole in appendix III and in the following split by value dimension.

[5] For this purpose the three digital experimental groups (digital basic, ownership manipulation, effort manipulation) were combined as it was of interest to see how digital products in general might lose in value against the physical product.

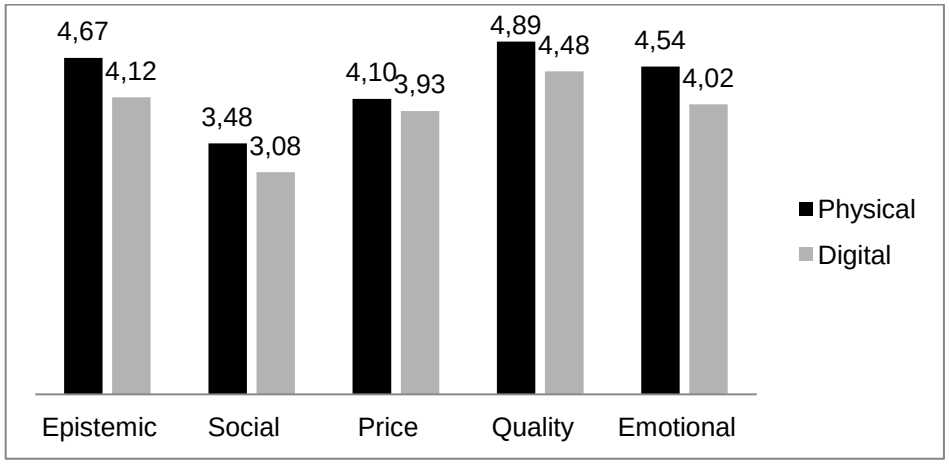



*Figure 3: Mean values: Physical Product compared to Digital Products*

For the first value dimension, epistemic value, the analysis shows a significant difference in scores for Group Physical (M = 4.67, SD = 1.63) and Group Digital (M = 4.12; SD = 1.56) with t(92) = 1.462, p = 0.074. The mean difference amounts to 0.545.

As a result, hypothesis 1a) is supported on a 10% significance level.

| H1a) **The perceived epistemic value is higher for the physical product than its digital counterparts.** |
|---|
| **SUPPORTED** |

With regard to the second dimension, social value, the analysis shows no significant difference in scores for Group Physical (M = 3.48, SD = 1.70) and Group Digital (M = 3.08; SD = 1.67) with t(96) = 1.025, p = 0.154 and a mean difference of 0.398.

Thus, hypothesis 1b) is not supported by the results.

| H1b) **The perceived social value is higher for the physical product than its digital counterparts.** |
|---|
| **NOT SUPPORTED** |

For the third dimension, price value, the analysis shows no significant difference in scores for Group Physical (M = 4.10, SD = 1.60) and Group Digital (M = 3.93; SD = 1.53) with t(91) = 0.460, p = 0.323 and a mean difference of 0.167.

Therefore, hypothesis 1c) is not supported by the results.

H1c) **The perceived price value is higher for the physical product than its digital counterparts.**

**NOT SUPPORTED**

The analysis for the fourth dimension, quality value, shows a significant difference in scores for Group Physical (M = 4.89, SD = 1.26) and Group Digital (M = 4.48; SD = 1.29) with t(89) = 1.373, p = 0.086. The mean difference amounts to 0.413.

As a result, hypothesis 1d) is supported on a 10% significance level.

H1d) **The perceived quality value is higher for the physical product than its digital counterparts.**

**SUPPORTED**

Finally, for the fifth dimension, emotional value, a significant difference in scores for Group Physical (M = 4.54, SD = 1.30) and Group Digital (M = 4.02; SD = 1.48) is discovered with t(92) = 1.556, p = 0.062. The mean difference is 0.521.

As a result, hypothesis 1e) is supported on a 10% significance level.

H1e) **The perceived emotional value is higher for the physical product than its digital counterparts.**

**SUPPORTED**

## 5.2 Increasing the Consumer Perceived Value

The second research question sets out to see if an increase in ownership or a reduction of the perceived effort to gain and handle the product would increase the value of a digital product. H2a) and H2b) were formed to test if there are any differences in the value dimensions between the basic digital product and the two manipulations of the digital product. Figure 4 provides an overview with the mean values ranging from zero to seven not only for the three digital versions but also the physical product as point of reference.

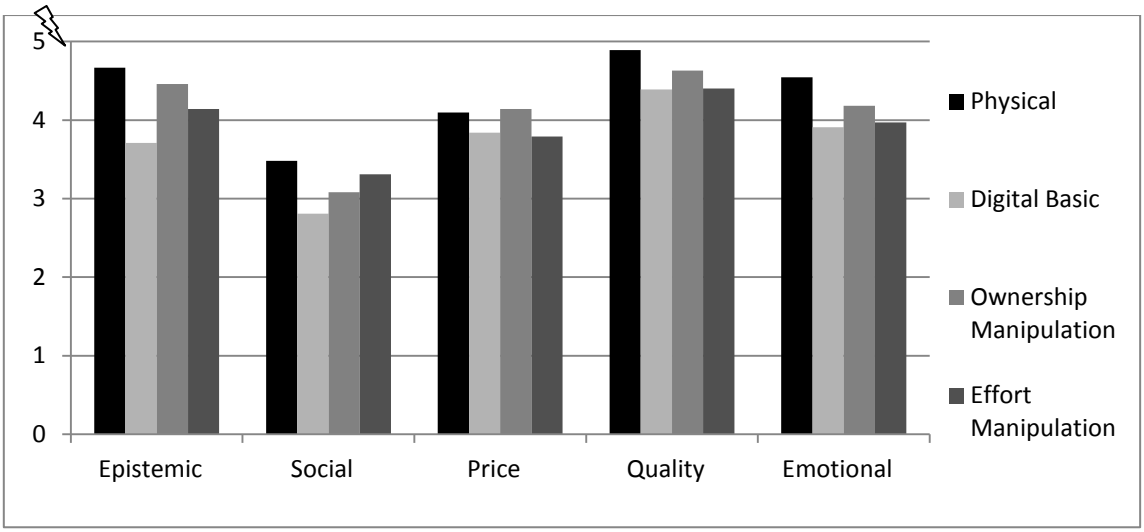



*Figure 4: Mean values: Comparing the three digital versions and the physical version*

As can be seen from the graph, the value increases for both manipulated versions in all dimensions (except Price Value) compared to the basic digital version. However, the differences are mostly not significant.

For the first manipulation which increases the notion of ownership, the mean differences compared to the basic digital product range from -0.238 to -0.744, which indicates an increase for all five value dimensions. Nevertheless, the Epistemic Value Dimension, shows the only significant difference in score for Digital Basic (M = 3.71; SD = 1.68) and Manipulation Ownership (M = 4.46; SD = 1.53) with $t(43) = -1.555$ and $p = 0.064$.

An overview of all scores for Manipulation Ownership can be found in appendix IV.

Overall it can be observed that the Epistemic Value difference is significant whereas all other dimensions have no significant differences. Therefore, the suggested improvement described in hypothesis 2a, is not empirically supported on a 10% significant level for four of the five dimensions.

H2a) **Increasing the ownership component for a digital product increases the Consumer Perceived Value compared to a basic digital version.**

**NOT SUPPORTED**

With regards to the second manipulation which reduces the perceived effort, the mean differences (positive difference for price; negative differences which indicate an increase in line with the hypothesis for the other four dimensions) are all not significant. An overview of all scores for Manipulation Effort can be found in appendix V.

Therefore, the suggested improvement depicted in hypothesis 2b, is not empirically supported on a 10% significant level for all of the five dimensions.

H2b) **Reducing the perceived effort for a digital product increases the Consumer Perceived Value compared to a basic digital version.**

**NOT SUPPORTED**

*Additional Remark*

With reference to figure 4, it can be seen that all digital versions (Digital Basic, Manipulation Ownership and Manipulation Effort) show a decrease of the mean values in all dimensions. The only exception is the dimension price for Manipulation Ownership where the mean stays equal. As illustrated for H1, the unity of digital products shows a **significant** loss of value compared to the physical version in three dimensions. However, when comparing each digital

version separately with the physical version the only significant differences (also on three out of five value dimensions) can be discovered between the basic digital version and the physical product [detailed results can be found in Appendix VI - VIII]. Comparing Manipulation Ownership with the physical product yields not significant differences. The same is true for comparing Manipulation Effort with the physical product. This indicates that the loss of value between the physical version and the manipulated versions is not as big as towards the basic digital version. So even if H2a and H2b cannot be proven on a 10% significance level, the presented aspect clarifies furthermore that the tendencies are in line with the hypothesis.

# 6. Discussion

*The following chapter will connect the results of our study with the theory proposed for this field. The main discussion is divided by the research areas.*

In line with the modern literature on value (Sweeney & Sautar, 2001; Sinha & DeSabo, 1998; Sheth et al. 1991), this thesis proposes that consumers assess both digital and physical content products not only from utilitarian aspects such as price value and quality value, but also in terms of the emotional value (e.g., the enjoyment and pleasure derived from the product), epistemic value (e.g. out of curiosity or to learn something) and the social consequences of what the product communicates to others. The differences in value appear in several but not all different dimensions of the value construct. Additionally, attempts to increase the value through improving ownership or reducing effort showed different positive effects on different dimensions. It is thus necessary to look at the value changes not on an overall, but on a dimensional value level in order to gain specific insights about the perception of value for the products under analysis.

## 6.1 Digitalization and Changes in Consumer Perceived Value

All in all, it can be seen that perceived value drops in all dimensions for the digital products, whereof three value changes showed significant differences.

As predicted, ***epistemic value*** was found to drop significantly when the cooking cards were digitalized. Participants perceived to derive less knowledge from the product and became less curious about cooking. As outlined before, a cause could be that digital content often carries an unserious and unreliable image which is mainly due to the vast amount of offers on the Internet (Baehr & Schaller, 2010). Also, it is harder to experience the content on a screen than

on a high quality gloss paper card. The value drop in this dimension could be compensated through the ownership manipulation, which added several features to the product and allowed the consumer to individualize their digital cooking cards. The addition of practical new features might have stimulated curiosity (Berlyne, 1954) and thus increased the epistemic value.

***Social value*** – unlike the expectations – did not change significantly. This might be explained by the nature of cooking cards and the general low rating of social value for both the physical and the digital product. Cooking cards are a product mostly used in a home environment without other persons directly noticing its usage. Hence, there might be no relevant social differences when a recipe is accessed digitally instead of a recipe card, as the social value derived from a product strongly depends on its visible consumption before others (Sheth et al., 1991).

***Price value*** does not change significantly with the digitalization, indicating that the customers perceive the cost to obtain the content to be equally reasonable in both the physical and the digital product. The initial thought that people expect the digital version to be cheaper monetary-wise might have been mitigated by higher perceived non-monetary costs. With regards to Rowley (2008) particularly non-monetary costs as the need to engage in self-service and the learning process connected with accessing, using and experiencing digital content appear regularly in a digital environment. All in all, price is thus – contrary to observations that consumers pay less in digital environments – no determining factor to evaluate the product higher or lower in a digital environment, given that the monetary price stays equal compared to the physical cards.

***Quality value*** has decreased significantly which is in line with our assumptions. The image quality on a screen cannot compare to the high quality paper printed cards of the physical

version, and visual appeal is an important influence on the overall product quality of digital products (Kim et al. 2010). Not being able to feel and touch the digital version, which is also a major influence to assess product quality (Schiff & Foulke, 2009), might be a further cause. Additional, digital content has, similar to information, an elusive nature (Rowley, 2008) and is therefore more difficult to pin down and grasp than physical content which is particularly important when a person tries to evaluate the quality.

***Emotional value*** also shows a significant decrease, since the digital version cannot be experienced with all senses and users are not able to experience it in the same way as the physical cooking cards; especially touch and control are important to stimulate emotions and relaxation with a product (Schiff & Foulke, 2009). As put forward in the literature review, digital content products lose compared to physical products as the sense of control and security is diminished by the loss of touch (Avey et al. 2009). Also, if the experience with the digital cooking card is less intense than the experience with the physical cards, fewer emotions are generated. Additionally to these factors, the analyzed target group (age mean value of 53; 50% have solely one Internet enabled device) are in general probably less familiar with digital products as they did not yet handled those on a day-to-day basis, which in turn might cause them to feel a bit cautious and un-relaxed towards the digital version. Only few persons embrace unknown products positively without going through a lengthy adoption process (Kalish, 1985).

## 6.2 The Effects of Manipulating the Basic Digital Product

This thesis furthermore presented participants with two manipulated versions of the digital product, one where perceived ownership was increased and one where perceived effort was reduced. Both manipulations did not provide adequate significant results which might be partly due to the research method. On the one hand, the sample sizes for each group were at the lowest limit they should be for an experiment to work, thus larger sample sizes might have revealed that a tendency of our study is actually significantly valid. On the other hand, the

manipulations themselves have only been tested with industry experts and not with the actual sample group. It might thus be that the actual participants did not perceive the manipulations in the same way as the digital affine experts and they had thus weaker effects. With those slightly hindering factors in mind one can still observe certain trends from the manipulation testing.

The results for the ownership manipulation show tendencies of value improvement in line with the prognoses for the dimensions quality, social, emotional and price value and a significant improvement of epistemic value. Firstly, the option to make the product more individual also prompts epistemic value in the form of curiosity and learning possibilities which is reflected in the significant results for this dimension. Second, hand in hand with the perception of making the digital product *one's own* (compare psychological ownership, Pierce et al., 2003) goes the feeling of having stronger control and security over the product which is important for enhancing the quality value. Finally, the tendency that emotional value is improved could be linked to strengthening the connection between the product and the owner as pointed out by Dittmar (1992).

It needs to be noted that ownership exerts its influence on value usually through an improved conspicuous consumption (Grace & Griffin, 2009), and with low ratings on the social dimension for all product versions, cooking cards can be expected to be not consumed particularly for social purposes. This might be an additional reason (besides the general issues mentioned in the beginning) why the other dimensions show only tendencies instead of significant results. When it comes to other digital content products that are more conspicuously consumed, like music or books, the influence ownership can exert on the value perceptions might be stronger.

And as mentioned before, the price value is no significant factor in this research setting.

The effort manipulation also showed tendencies to have positive influences on value; however none of the dimensions showed significant results. Here again, this might be due to some specific characteristics of this very study. Half of the participants in the study were above 50 years old and only 20% owned Smartphones. They might thus not have perceived a reduction in effort by the manipulation, as they were not familiar enough with using digital media to recognize how the manipulation could have facilitated their product use. The barrier to engage in self-service and the learning process connected with accessing, using and experiencing the digital content might have seemed simply too high (Rowley, 2008). Yet again, there are strong indications in literature that effortlessness in general does have a positive effect on the evaluation of digital products (Collier & Bienstock, 2009) and further studies with maybe a different target group or a manipulation that also includes an element of *uncomplicated getting-to-know the digital world* are needed, to discover the true influence of effort on value perceptions in the digital world.

# 7. Conclusion

This thesis represents one of the very first empirical research studies devoted to understanding the perceived value differences between physical and digital products from a consumers' perspective. The findings enhance knowledge of what and how individual value dimensions differ when a physical content product is digitalized. The discussion showed how the results can be seen in the light of others who have examined connected areas. The knowledge derived from this study enables more effective understanding of customer's product perceptions for physical and digital content products.

In the first part of the study, evidence for a value drop was found and potential causes were explained. Most notably, practitioners and future researchers should focus on the **quality, emotional and epistemic value dimensions** when developing digital content products that are related to physical ones. Many options are valid where and why one can start acting which will be exemplified in the managerial implications shown below.

In contrast to that, the supplementary research was found to reveal only indications of how enhancing ownership or reducing the perceived effort could make a digital product more valuable. Based on the presented theory an improvement seems natural, but the results of this study are not fully in line and strong enough to support this view.

In the following paragraph, the results discussed so far will be put into a more practical view to make them applicable for practitioners.

## 7.1 Managerial Implications

For marketers, recognition of the importance of the different dimensions of consumer desired value could assist content producers in the physical and digital world in developing more competitive products and allow reaching target consumers using more effective marketing and promotional strategies. Acknowledging that different value perceptions exist for physical and digital content products can help to focus resources. From this research particular focus should be placed on the three dimensions that showed a significant drop in value for the digital version – Emotional, Quality and Epistemic. For each of those dimensions some hands-on implications to improve digital content products will be demonstrated in the following. The suggestion immerged during the whole research process but mainly from the expert interviews, the literature review and some observed best-case examples.

***Emotional***

The first implication to enhance emotional value is to include more senses or to address senses in a different way (e.g. visual difference between reading and watching a clip) when the customer comes into contact with the product. This could be done with e.g. videos, audio files or in the case of an App for Smartphone's or Tablets drawing on the tactile interaction with the device.

Secondly, the digital content should be made more of an experience, hence extend the experience beyond the initial purpose of, in this case, planning dinner and/or cooking dinner. Services can be added which come into play before or after *cooking,* e.g. generation of automatic shopping lists, home delivery of groceries, sharing picture of results with friends.

***Quality***

One of the most important keys to high quality offerings is to control how the digital content is displayed. Hence, it must be ensured that the program or app that shows the content to the consumers is working smoothly on all potential devices. Furthermore, the customer can be convinced that a product has good quality by having their trust and by giving them the security that they can trust the company producing the offer. In the digital sphere a company has to ensure to be separated from the clutter (e.g. free content from unknown sources where customers do not know who and where content was produced). This can be done by giving the customers cues like high quality brand names or involving e.g. famous chefs. With this a customer has the secure feeling of knowing where the content comes from and can therefore easily trust that it is of high quality

***Epistemic***

As outlined before, epistemic value can be stimulated for this digital product either via increasing the curiosity or via providing knowledge.

Teasing customers that something new will come in XX days, providing novel/extra information related to their interest to e.g. loyal customers via a bonus scheme and using the original driver of people to collect things is important. If for example a digital version would provide a wider access to the collection (all recipes at once), something new should still be offered in regular time intervals to keep customers on the hook, e.g. personal recommendations or special season recipes.

Making customers believe that the content could enhance their knowledge is again connected to making them trust the source. Branding the source will separate the recipe product from the tons of free alternative out there in the digital environment. Again, the more reliable a

company seems the more will consumers be inclined to believe that the content is worth getting to know and able to enhance their knowledge.

## 7.2 Limitations and Research Opportunities

Although this thesis adds empirical evidence[6] and a set of implications to both academics and marketers to the field of consumer perceived value literature and digital content products, there are still several limitations of this study that need to be considered and can be potential signposts for future studies.

Firstly, perceived value of a product is a dynamic concept being linked to individual opinions of a certain target group. This research provides a picture of what consumers of one specific partner company perceived valuable at a particular point in time. Future research employing a longitudinal design might be better suited the susceptibility of change in different perceptions between physical and digital products.

Secondly, this study was solely focused on current customers of the physical product. This was a necessary condition set in the beginning of this research as perceived value is a highly individual concept and therefore the target group asked cannot be too heterogeneous to find similarities[7]. Nevertheless, it could be definitely interesting and valuable to research different perceptions of non-customers and customer and see if there are similarities or particular differences when the familiarity with the product differs. As highlighted before, perceived

[6] With regards to the empirical evidence one must keep in mind that the results hold on the significance level of $p < 0.10$ and not on the more conventional significance level of $p < 0.05$ which is a limitation in itself. Furthermore, all responses of customers should be seen as attitude and not as behavior.

[7] It should also be kept in mind that the experimental design n might have been affected due to the fact that all responses were collected via an online questionnaire. As an alternative, the experiment could have been conducted with a printed out questionnaire (paper vs. digital) or even with participants comparing the actual physical product with the digital product in real life, which was unfortunately not possible due to the limited resources of this study.

value is indeed build up already before a purchase is made and does therefore not rely on the fact that an actual purchase has been made.

Thirdly, this study focused on one particular category of digital content products due to the willingness of our partner company to participate with this certain category. Two options for further research open up from this perspective: A) Studying more than one category of physical-digital counterparts and comparing those results could increase the knowledge about digital content products in general and would make the findings more reliable. Also external validity would be added to the research. And B) The relative importance of the five value dimensions for different digital product categories could be analyzed with a confirmatory factor analysis or/and structural equation model to gain insights how value of digital products is composed.

Considering the importance of digitalization in our society and the urge of companies to find profitable business models, deeper investigation of the complex relationships and perceptions that customers have for digital products is needed and valuable.

The authors of the thesis look forward to see further research on this subject in the future!

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# Appendix

## *I. Control Variable Overview*

| | Group Name | Descriptives | |
|---|---|---|---|
| **Age** | Group Physical | Range=52<br>M=53.84; SD=16.661 | ▫ No significant differences between Group Physical and Digital Basic t(34)=0.534; p=0.597<br>▫ No significant differences between Group Physical and Manip O t(36)=0.542; p=0.597<br>▫ No significant differences between Group Physical and Manip E t(38)= - 0.160; p=0.874<br>▫ No significant differences between Group Dig Bas and Manip O t(34)=0.080; p=0.936<br>▫ No significant differences between Group Dig Bas and Manip E t(36)=-0.830; p=0.412<br>▫ No significant differences between Group Manip O and Manip E t(38)=-0.805; p=0.426 |
| | Group Digital Basic | Range=42<br>M=51.12; SD=13.564 | |
| | Group Manip. Ownership | Range=56<br>M=50.68; SD=18.120 | |
| | Group Manip. Effort | Range=44<br>M=54.57; SD=12.081 | |

| | | Descriptives |
|---|---|---|
| **Sex** | Group Physical | Female = 58%; Male = 42% |
| | Group Digital Basic | Female = 78%; Male = 22% |
| | Manip. Ownership | Female = 58%; Male =42% |
| | Manip. Effort | Female = 71%; Male=27% |

| | | Laptop | PC | Smartphone | Internet TV | Tablet |
|---|---|---|---|---|---|---|
| **Devices-in-use** | *Whole Sample* | *72%* | *68%* | *22%* | *24%* | *9%* |
| | Group Physical | 72% | 72% | 28% | 39% | 6% |
| | Group Digital Basic | 83% | 67% | 11% | 17% | 11% |
| | Group Manip O | 70% | 60% | 30% | 20% | 10% |
| | Group Manip E | 64% | 73% | 18% | 23% | 9% |

## *II. Items sorted by Value Dimensions*

| Dimension | Question Item | Source |
|---|---|---|
| **Emotional** | Cooking with the product is a pleasurable experience. | Sweeney & Soutar, 2001 |
| | Cooking with the product makes me feel good. | Sweeney & Soutar, 2001 |
| | I feel relaxed about cooking with the product. | Sweeney & Soutar, 2001 |
| | I enjoy cooking with the product. | Sweeney & Soutar, 2001 |
| | Looking at the product makes me want to use it. | Sweeney & Soutar, 2001 |
| **Epistemic** | Using the product has increased my curiosity in cooking. | Gill et al., 2007 based on Sheth et al., 1991 |
| | *Using the product is something different or novel.** | Gill et al., 2007 based on Sheth et al., 1991 |
| | Making use of the product will teach me more about cooking. | Gill et al., 2007 based on Sheth et al., 1991 |
| **Price** | The product offers value for money. | Sweeney & Soutar, 2001 |
| | The recipes are worth the effort of collecting them. | Gill et al., 2007 based on Sheth et al., 1991 |
| | The product is reasonable priced. | Sweeney & Soutar, 2001 |
| | De Bästa Recepten is a good product for its price. | Sweeney & Soutar, 2001 |
| | Using the product is economical. | Sweeney & Soutar, 2001 |
| **Quality** | The recipes I get from De Bästa Recepten are of consistent quality. | Sweeney & Soutar, 2001 |
| | The product is well made. | Sweeney & Soutar, 2001 |
| | With De Bästa Recepten I perfom consistently well in the kitchen. | Sweeney & Soutar, 2001 |
| | The product has an acceptable standard of quality. | Sweeney & Soutar, 2001 |
| **Social** | When using the product it improves the way I am perceived by my peers. | Sweeney & Soutar, 2001 |
| | Cooking with the product makes a good impression on other people. | Sweeney & Soutar, 2001 |

### *III. Results from the independent t-test with Group Physical and Group Digital*[8]

| | Group Physical | | Group Digital | | Mean differences | t-value and probability |
|---|---|---|---|---|---|---|
| | Mean | St.Dev | Mean | St.Dev | | |
| Quality Value | 4.8900 | 1.26054 | 4.4773 | 1.28731 | 0.41273 | **t(89) = 1.373; p= 0.086** |
| Epistemic Value | 4.6667 | 1.63299 | 4.1214 | 1.55674 | 0.54524 | **t(92)= 1.462; p= 0.074** |
| Emotional Value | 4.5440 | 1.29810 | 4.0232 | 1.47908 | 0.52081 | **t(92)= 1.556; p= 0.062** |
| Social Value | 3.4800 | 1.69853 | 3.0822 | 1.66670 | 0.39781 | t(96)= 1.025; p= 0.154 |
| Price Value | 4.0960 | 1.60117 | 3.9294 | 1.52737 | 0.16659 | t(91)= 0.460; p= 0.323 |

### *IV. Results from the independent t-test with Group Digital Basic and Manipulation Ownership*[9]

| | Group Digital Basic | | Manip Ownership | | Mean differences | t-value and probability |
|---|---|---|---|---|---|---|
| | Mean | St.Dev | Mean | St.Dev | | |
| Quality Value | 4.39 | 1.50 | 4.63 | 1.07 | -0.238 | t(42) = -0.613; p= 0.272 |
| Epistemic Value | 3.71 | 1.68 | 4.46 | 1.53 | -0.744 | **t(43)= -1.555; p= 0.064** |
| Emotional Value | 3.91 | 1.58 | 4.18 | 1.57 | -0.261 | t(43)= -0.553; p= 0.292 |
| Social Value | 2.81 | 1.74 | 3.08 | 1.59 | -0.267 | t(45)= -0.549; p=0.293 |
| Price Value | 3.84 | 1.77 | 4.14 | 1.25 | -0.300 | t(41)= -0.650; p=0.260 |

[8] The degrees of freedom differ due to a pair wise exclusion of cases. Group Physical has in this analysis a group size between 24 and 25 and Group Digital between 66 and 73.

[9] Group Digital Basic has a group size of 20-21 and Group Manipulation Ownership of 23-26.

### *V. Results from the independent t-test with Group Digital Basic and Manipulation Effort*[10]

| | Group Digital Basic | | Manip Effort | | Mean differences | t-value and probabilities |
|---|---|---|---|---|---|---|
| | Mean | St.Dev | Mean | St.Dev | | |
| Quality Value | 4.39 | 1.50 | 4.40 | 1.35 | -0.01 | t(42) = -0.023; p= 0.491 |
| Epistemic Value | 3.71 | 1.68 | 4.14 | 1.45 | -0.43 | t(43)= -0.922; p=0.181 |
| Emotional Value | 3.91 | 1.58 | 3.97 | 1.34 | -0.52 | t(43)= -0.120; p=0.453 |
| Social Value | 2.81 | 1.74 | 3.31 | 1.71 | -0.498 | t(45)= -0.985; p=0.165 |
| Price Value | 3.84 | 1.77 | 3.79 | 1.61 | 0.050 | t(42)= 0.098; p=0.461 |

### *VI. Results from the independent t-test with Group Physical and Group Digital Basic*[11]

| | Group Physical | | Group Digital Basic | | Mean differences | t-value and probability |
|---|---|---|---|---|---|---|
| | Mean | St.Dev | Mean | St.Dev | | |
| Quality Value | 4.89 | 1.26 | 4.39 | 1.50 | 0.503 | t(43)=1.223; p=0.114 |
| Epistemic Value | 4.67 | 1.63 | 3.71 | 1.68 | 0.952 | **t(43)=1.927 p=0.031** |
| Emotional Value | 4.54 | 1.30 | 3.91 | 1.58 | 0.630 | **t(44)=1.483 p=0.073** |
| Social Value | 3.48 | 1.70 | 2.81 | 1.74 | 0.671 | **t(44)=1.318 p=0.097** |
| Price Value | 4.10 | 1.60 | 3.84 | 1.77 | 0.254 | t(42)=0.497 p=0.311 |

[10] Group Digital Basic as a group size of 20-21 and Manipulation Effort of 22-26.
[11] Group Physical has a group size of 24-25 and Group Digital Basic of 20-21.

### *VII. Results from the independent t-test with Group Physical and Manipulation Ownership*

| | **Group Physical** | | **Group Manip Ownership** | | Mean differences | t-value and probability |
|---|---|---|---|---|---|---|
| | Mean | St.Dev | Mean | St.Dev | | |
| Quality Value | 4.89 | 1.26 | 4.63 | 1.07 | 0.265 | t(47)=0.792 p=0.216 |
| Epistemic Value | 4.67 | 1.63 | 4.46 | 1.53 | 0.208 | t(46)=0.465 p=0.326 |
| Emotional Value | 4.54 | 1.30 | 4.18 | 1.57 | 0.369 | t(47)=0.898 p=0.187 |
| Social Value | 3.48 | 1.70 | 3.08 | 1.59 | 0.403 | t(49)=0.875 p=0.193 |
| Price Value | 4.10 | 1.60 | 4.14 | 1.25 | -0.046 | t(47)=-0.111 p=0.456 |

### *VIII. Results from the independent t-test with Group Physical and Manipulation Effort*

| | **Group Physical** | | **Group Manip Effort** | | Mean differences | t-value and probability |
|---|---|---|---|---|---|---|
| | Mean | St.Dev | Mean | St.Dev | | |
| Quality Value | 4.89 | 1.26 | 4.40 | 1.35 | 0.492 | t(45)=1.294 p=0.101 |
| Epistemic Value | 4.67 | 1.63 | 4.14 | 1.45 | 0.527 | t(47)=1.193 p=0.120 |
| Emotional Value | 4.54 | 1.30 | 3.97 | 1.34 | 0.577 | **t(47)=1.535 p=0.066** |
| Social Value | 3.48 | 1.70 | 3.31 | 1.71 | 0.172 | t(49)=0.361 p=0.36 |
| Price Value | 4.10 | 1.60 | 3.79 | 1.61 | 0.304 | t(48)=0.670 p=0.253 |